PATENT
PU030237

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	KNUTSON et al.	Confirmation:	3761
Serial No.:	10/590,893	Art Unit:	2614
Filed:	August 28, 2006	Examiner:	Jamal, Alexander
For:	Acoustic Echo Canceller with Multimedia Training Signal		

DECLARATION UNDER 37 C.F.R. §1.132

I, Benyuan Zhang, declare and say:

1. That I am a citizen of the United States of America, and I reside at 6 Westbrook Drive, Cherry Hill, New Jersey 08003, United States of America;

2. That I received a Bachelors of Science degree in Electrical Engineering from Shanghai Jiao Tong University in 1983 and a Master of Science degree in Electrical Engineering from both Shanghai Jiao Tong University in 1989 and the State University of New York at Buffalo in 1997;

3. That, since 1998, I have worked in the consumer electronics industry;

4. That since 2004 I have been employed by Thomson S. A. ("Thomson");

5. That I have read the above-identified patent Application, Serial No. 10/590,893 ("Application"), published as US 2007/0189508 ("Knutson");

6. That I have reviewed the Examiner's rejections and the reasons therefor in the Final Office Action mailed May 8, 2009 ("Final Office Action");

7. That I consider myself to be a person with ordinary skill in the subject matter disclosed by Knutson as of March 5, 2004;

Sampling rates

8. That, as of March 5, 2004 and without undue experimentation, it was obvious and well known in the art that audio signals, *i.e.*, for entertainment purposes, typically were sampled at 44.1 ksps or 48 ksps for a high-fidelity system, and, that such sampling rates must be larger than

about 40 ksps to fulfill the Nyquist criterion that teaches sampling at twice the maximum analog frequency, which is about 20 kHz for audio. For a high end entertainment sound card system, a signal to a speaker or from a microphone is sampled at, for example, 44.1 ksps or 48 ksps. But, for a microphone component used for human voice telephony, the sampling rate of an incoming microphone signal is obviously less than for the signal to a high fidelity speaker. Knutson characterizes the incoming *microphone* signal bandwidth/sampling rate at least as "audio conferencing and telephony and may be, but is not limited to, 300 Hz to 3.3 KHz" or, for example, 8 ksps;

Signal conversion

9. That, as of March 5, 2004 and without undue experimentation, it was obvious and well-known in the art that one would sample an analog signal as shown in Figure 2, 4, 5, 7, 8 in order to build and use the invention described according to Knutson and that respective analog-to-digital and digital-to-analog converters were universally applied, for example, in personal computer and Personal Data Assistant (PDA) products described by Knutson with a great variety of sample rates available. It would not be necessary to explicitly show analog signal conversion for an analog speaker or microphone in devices such as those disclosed by Knutson;

10. That, as of March 5, 2004 and without undue experimentation, it was obvious and well-known in the art that sound cards residing in personal computers, PDAs and similar devices would *always* have associated digital-to-analog conversion (to produce actual sound from digital signals) and analog-to-digital conversion (to produce digital representations of sound received from an acoustic transducer such as a microphone);

11. That, as an example, U.S. Patent No. 6,009,151 (filed August 27, 1996) to Staples shows "audio interface logic 55" interfacing a speaker 500 and microphone 502 of a PC Card (FIG. 2a) or external to the card (FIG. 2b) or via an adapter (FIG. 2c). The Staples patent is but one example that an analog-to-digital or digital-to-analog interface was well known in the art for many years prior to March 5, 2004, such interface being a necessary and obvious component to operate a digital speakerphone system from analog sound inputs from a microphone and outputs to a speaker;

Delay matching

12. That, as of March 5, 2004 and without undue experimentation, it was obvious and well-known in the art that matching a delay of a first path with a delay of a second path could be implemented anywhere along the feedback/transmission paths as indicated by the Examiner, including, using the delay matching buffers 532 and 542 as shown in Figure 5 of Knutson or in software to compensate for the delay in the sound card buffers, and that, as of March 5, 2004 and without undue experimentation, for a given sound card, the difference between output and input buffers were obvious and well-known in the art. How to decide the delay disclosed in Knutson for this purpose was obvious and well-known;

Average processor load

13. That, as of March 5, 2004 and without undue experimentation, it was obvious and well-known in the art that there were numerous methods available to measure average processing load. Some popular examples included, as of March 5, 2004, the well-known TOP utility. TOP was commonly in use to assess average processing load and make decisions therefrom. Also, the Microsoft Windows operating system, (all versions available as of March 5, 2004) provided task management that reported aspects of processing load including at least one average; and

14. That the undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application cited above or any patents issuing thereon.

7/28/2009, 2009

Benyuan Zhang

Attachment: US 6,009,151